

Claims

1. A member-joining device to connect a first member having a pair of opposing walls and a second member having a pair of opposing walls, comprising:
 - a first bridge member for spanning the gap or for intervening between the opposing walls of said first member at a predetermined position of said first member;
 - a second bridge member for spanning the gap or for intervening between the opposing walls of said second member at a predetermined position of said second member; and
 - a drawing means for drawing the first bridge member and the second bridge member in the direction where both are close to each other;

wherein said first member and said second member are pressed and connected by a drawing force based on said drawing means.
2. A member-joining device according to claim 1, wherein said drawing means draws and tightens said first bridge member and said second bridge member by utilizing screw forwarding mechanisms.
3. A member-joining device according to claim 1 or claim 2 comprising:

wherein said drawing means draws said first bridge member and said second bridge member together by penetrating a screw into a penetrating screw hole formed in either said first bridge member or said second bridge member and screwing said screw into a threaded screw hole provided in the other.
4. A member-joining device according to claim 1, wherein said first member and said second member have a square pipe shape.
5. A member-joining device according to at least one of claim 1 to claim 4 wherein adjacent second members are joined to each other through the first member; each member opposes each other and has a pair of slightly beveled contact face in the

downwardly drawing direction; and an end face of said second member is pressed to the contact face to join said second member.

6. A member-joining device according to claim 5, wherein said second member is a pipe member; said first member has a pipe-like outer member having a cross sectional shape coinciding with said second member and an inner member projecting outward from each end face of the outer member; the each end face is said contact face, and the projection portion of said inner member is inserted into the end portion of the second member to connect the first member and the second member together.
7. A member-joining device according to claim 6, wherein a line connecting between said first bridge member and said second bridge member is not in right angles to said contact face from a side view; a dividing force is generated by the drawing force to slide a contact face and an end face; an outer peripheral face of said inner member and an inner peripheral face of said second member contact closely with the sliding force; and a position of said first member and said second member is determined.
8. A member-joining device according to claim 7, wherein the first member and the second member engage in a direction which substantially coincides with a horizontal direction; and a line connecting the first bridge member provided at the first member to the second bridge member provided on the second member at one end of the first member and another line at the other end of the first member have a shape of “/ \” from a side view.
9. A member-joining device according to claim 8, wherein the lines having a shape of “/ \” from the side view are in a lower half region of the vertical direction of the first member and the second member.

10. A member-joining device to connect the first member and the second member comprising:
 - a position determining means for projecting in the predetermined position of said first member;
 - a first fixing portion having a screw hole provided on the projection portion of said position determining means;
 - a second fixing portion having a screw penetrating hole provided on the predetermined position of said second member;
 - a drawing means for drawing the fixing portion and the second fixing portion by screwing a screw;
wherein the drawing means sets a line connecting said first fixing portion and said second fixing portion so that a divisional force to slide said first member and said second member along their contact face is generated by the drawing force;
 - said position determining means restricts a sliding movement to effect the position determining means.
11. A member-joining device according to claim 10, wherein at least one of said first member and said second member has a displacement prevention means corresponding to a force at substantially right angles to both closing force and sliding force, which restricts the displacement in the direction at substantially right angles to both said closing force and said sliding force to determine the position of said first member and said second member.
12. A member-joining device according to claim 11, wherein said second member is a pipe member and said first member comprises an inner member projecting outward, and said inner member is said position determining means and said displacement prevention means.
13. A member-joining device according to claim 12, wherein said inner member comprises opposing walls, said first fixing portion is the first bridge member

which spans or intervenes between said opposing walls, said pipe member comprises a pair of opposing walls, and said second fixing portion is the second bridge member which spans or intervenes between said opposing walls.

14. A member-joining device according to at least one of claim 10 to claim 13, wherein said first member and said second member are a square pipe.
15. A member-joining device according to at least one of claim 10 to claim 14, wherein the adjacent second members are joined to each other through the first member, said first member comprises a slightly beveled pair of contact faces which are reversely and downwardly opposing, and an end face of said second member is pressed to the contact face to connect said second member.
16. A member-joining device according to claim 10 or claim 11, wherein said first fixing portion is provided externally on said first member.
17. A member-joining device according to claim 16, wherein said first member comprises a rail groove, and said first fixing portion is provided by engaging with said rail groove.
18. A member-joining device according to claim 16 or claim 17, wherein said second fixing portion is provided on the slope caved from the predetermined position of the second member.
19. A member-joining device according to at least one of claim 16 to claim 18, wherein said second fixing portion is formed by inserting a fixing member having a screw penetrating a hole at an opening portion installed in the predetermined position of the second member.